Dual

CS 714 Q

Bedienungsanleitung
Notice d'emploi
Operating instructions
Gebruiksaanwijzing
Instrucciones de manejo
Bruksanvisning
Istruzioni per l'uso

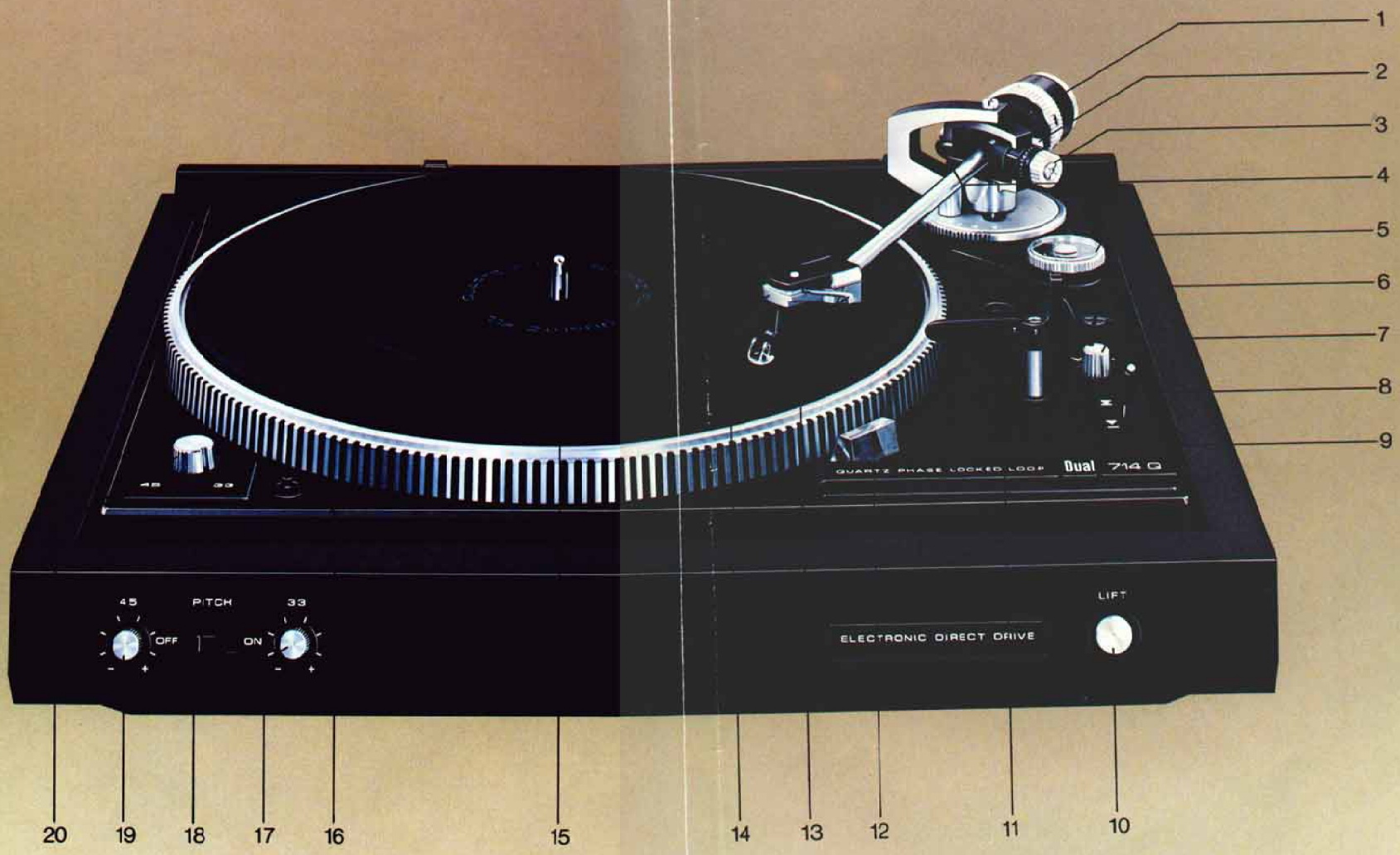


Fig. 1

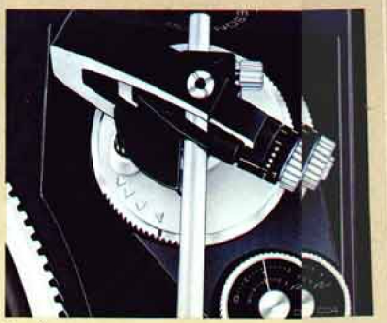


Fig. 2

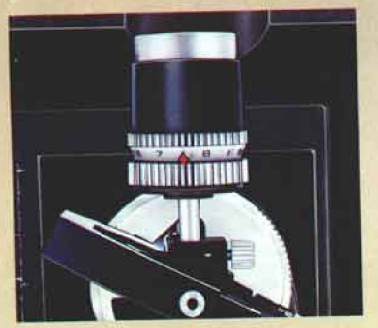


Fig. 3

Fig. 4

Operation

(1) Tonearm counterbalance with tuning anti-resonator
(2) Locking screw for tonearm counterbalance
(3) Stylus pressure setting
(4) Alignment screw for tonearm height
(5) Anti-skating setting
(6) Adjustment ring for tonearm lowering speed
(7) Turning knob for tonearm lowering aid
(8) Cueing control
(9) Tonearm post with tonearm rest
(10) Control button for lift operation
(11) Alignment screw for tonearm setting down point
(12) Illuminated stroboscope
(13) Tonearm lift
Cartridge holder lock
(14) Cartridge holder
(15) Motor axis for record centering
(16) Transport locking screw
(17) Pitch control for 33 rpm
(18) Rotary switch for quartz-precision adherance to the rated speed
(19) Pitch control for 45 rpm
(20) Platter speed setting

Unpacking and setting up

Please also observe the information contained in the packing instructions.

After opening the box place aside the polystyrene insert with the complete accessories. Remove the console with the inserted record player from the box and put the unit in the place intended for it. First of all read the instructions slips on the unit and then remove these afterwards with the packing films. We recommend you keep the original packaging in case you need this later on for further transport.

To release the transport locking screws (Fig. 1) turn these in clockwise direction until they slide down approximately 15 mm and then tighten these by turning them further in clockwise direction. In this way, the record player is spring mounted in playing position (Fig. B).

A B C

Now place the platter directly onto the motor axis. Remove the tonearm counterbalance from the polystyrene insert and place the stem of the counterbalance, after releasing the locking screw **(2)**, into the opening intended for this at the back end of the tonearm. At the same time, the triangular recess on the stem should point downwards (Fig. 4). Balancing as well as setting of stylus pressure and anti-skating which is now necessary are described in more detail on page 18.

Please refer to the separate data sheet for the stylus pressure of the cartridge already inserted in the unit.

Now connect to the reproducing amplifier and place the mains lead into the socket. Please pay attention to the separate information in these instructions.

Subsequent transport

The platter lies on the motor axis of the electronic central drive without additional locking and must be removed before each transport. In addition, the transport locking screws must be loosened in anti-clockwise direction, pulled upwards and secured by further turning (Fig. C). The tonearm counterbalance should be removed.

Make sure that the tonearm is locked and that the stylus protection is swivelled downwards.

If you intend to dispatch your unit, make sure that the packaging is impeccable and, if possible, use the original packaging.

Connection to the AC mains

The unit can be connected to alternating current 50 or 60 Hz, 110 – 125 V or 220 – 240 V and is normally set to 220 V.

Your record player can be run on mains frequencies of 50 or 60 Hz without conversion of the motor.

Conversion of the mains voltage should always be carried out by specialist dealers or authorized Dual service workshops.

Connection to the amplifier

The HiFi record player can be equipped with a DIN plug or RCA (cynch) plugs.

Should your receiver or reproducing amplifier be designed fo an RCA (cynch) plug, but the record player is provided with a DIN plug – or vice versa – then get your specialist dealer to carry out adaption by means of replacement of the complete cartridge lead.

Cartridge lead with DIN plug 1.10 m long, order no. 207 303.

Cartridge lead with RCA (cynch) plugs, 1.10 m long, order no. 207 301.

Dual cartridge leads are also designed to be plugged into the record player.

When changing over from DIN to cynch (RCA) plugs, do not forget to connect the amplifier (receiver) and record player with the enclosed system earth. Furthermore it is recommended to disconnect the chassis connections at the muting switch of the unit.

An equalizer-amplifier is necessary if your stereo amplifier or receiver has no direct input for magnetic cartridges. In this case we recommend the Dual TVV 47 which is equipped with plug-in connections.

Dust cover

In order to place the dust cover in position, turn the unit round so that the special hinges are in front of you and are easily accessible. First of all make sure that the insert brackets on the hinges, into which the cover will be placed, are in correct position before you place the dust cover in position parallel to the brackets and push this in fully.

In this position (opening angle approx. 60°) the cover can also be removed at all times.

Should it be necessary to correct the balancing moment (elastic force which keeps the cover above the console), this can be carried out by turning both knurled screws. Please adjust both screws equally. In most cases, correction by half a screw turn each will be sufficient.

Setting up and operation

Before playing the first record, please adjust the pickup arm return mechanism follows:

1. Release the pickup arm and raise it with the arm lift lever.
2. Swing the arm to the center of the turntable. (The arm is returned automatically).

Select platter speed, 33 1/3 or 45 rpm, then unlock tonearm, move stylus tip protector upwards.

Now remove tonearm from post and swing it over the record. After the tonearm has been swung over the record the turntable platter automatically starts to rotate. When the tonearm is lifted from its post and placed beside the tonearm rest, the platter will rotate. The record on the platter can be cleaned (with an antistatic cloth etc.) when the tonearm is in this position.

During this operation, at the record diameter of 30 cm or 17 cm an index hole is perceptible, this indicates the correct set-down point for the diamond to the lead-in groove of the record.

This aid for the correct setting of the tonearm may be switched off if the tonearm should be lowered when a 30 cm record is used at another position, for ex. in the area of a 17 cm record.

In order to lower the tonearm to a specific position of the record only a light touch of the guide lever **(8)** or by pressing the LIFT button **(10)** is necessary.

The cueing lift now operates and the diamond is placed carefully on the record.

After playing the record the tonearm will return to the rest and shut-off the unit automatically. The cue control lever will return to its original position. It is recommended to lock the tonearm and to flap down the stylus protection after play.

If the arm is not returned automatically due, for example, to an anormality in the last groove of a record, we recommend that you lift the arm with the lift lever or by pressing the LIFT button, and swing it inwards by hand.

Interruption of Play (Pause)

Place the cueing control in ▼ position. When this is lowered the record continues to play. The last few notes played before the pause are repeated.

Technical information

Cartridge and stylus

Please refer to the "Information on your unit's cartridge", enclosed with these instructions for use.

Fitting a 1/2" cartridge

Move the page 34 outward.

With extremely light ULM cartridges (ultra-low-mass), your Dual record player develops outstanding reproduction capabilities. In this case, the characteristics of the tonearm are so excellent that considerably heavier 1/2" cartridges also function under optimum conditions. Proceed as follows if you wish to fit a 1/2" cartridge.

1) If there is one on your unit, remove the removal prevention screw (Fig. 5/"S").
2) Swivel the tonearm lift **(13)** backwards and remove the ULM cartridge from the holder (Fig. 6).
3) Slide the short holder plate (Fig. 7) approximately 5 mm backwards and lift it off.
4) Place the long holder plate onto the tonearm (Fig. 8) in such a way, that it lies on the surface and the back and is pointing upwards at the front at an angle of approximately 30°. Shift the holder plate so that its large opening lies above the round guide lug in the tonearm. Now carefully swivel the holder plate into horizontal position and tightly pull it forwards until you can feel it clicking into position.
5) Attach the 1/2" cartridge with the enclosed accessories to the cartridge holder. This has been fitted correctly if the stylus – viewed from above – is in the V-shaped recess of the enclosed fitting template. Viewed from the side, the stylus must be in the rectangular recess (Fig. 9).
6) Connect the cartridge holder's connection to the cartridge. The connections have color codes:

red	R	right hand channel
green	RG	right hand channel chassis
blue	GL	left hand channel chassis
white	L	left hand channel

7) Place the cartridge holder at an angle from below onto the tonearm head, press it fully backwards and upwards until you can feel it clicking into position. Now carefully swivel the tonearm lift forwards and, if you wish, lock the cartridge and the stylus to prevent removal by screwing the described screw.
8) Depending on requirements, screw on one or both of the enclosed disk-shaped additional weights to the rear of the tonearm counterbalance **(1)**. Turn the smaller thread of the special screw into the thread of the counterbalance. Screw **one** additional weight onto the screw – with the knurled marking on the outside – if the weight of the fitted cartridge is no more than approximately 4 g and a second one if it is heavier.
9) Now once again carefully balance the tonearm – as described in the section on "Balancing the tonearm".

Fitting cartridges with recess-type cartridge assembly

Cartridges with a Dual recess-type cartridge assembly can be fitted in the same way as 1/2" cartridges. The cartridge holder (Fig. 10) is designed to permit fitting of such cartridges without an additional attachment screw.

Removal prevention

Thanks to an ingenious device, the cartridge and stylus can be easily safeguarded against unwanted removal. For this purpose, the self-tapping screw provided with the accessories is screwed into the hole on the left hand side of shining pin on the holder plate (Fig. 5). At the same time, make sure that the tone-arm lift **(13)** is vertical to the cartridge head center.

Stylus

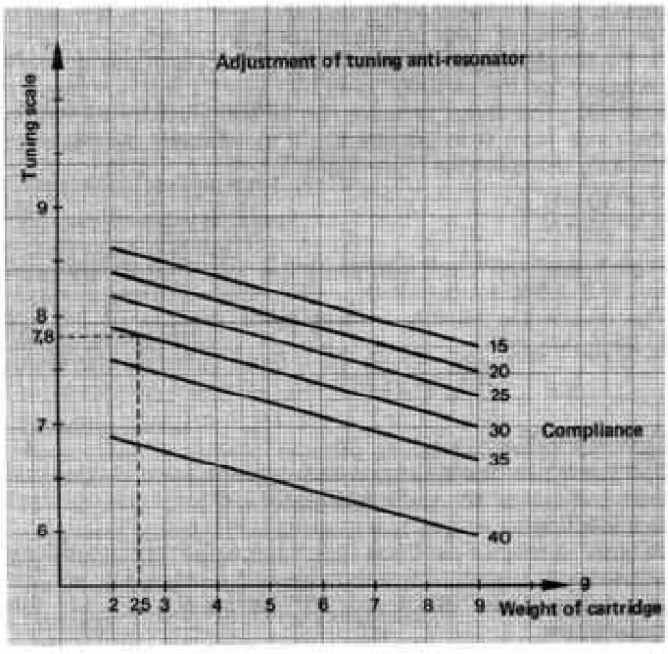
The stylus is subjected to natural wear and tear during normal playing. Therefore, we recommend you occasionally check the stylus and, in the case of diamond styli, this should be carried out after approximately 300 playing hours. Your specialist dealer will be pleased to do this for you free of charge. Worn or damaged (splintered) styli chisel the modulation from the grooves and destroy records. Therefore, only use as replacement the stylus types recommended in the technical data of the cartridge. Copied styli result in audible quality losses and increased wear and tear of records. Please remember that, for physical reasons, the stylus holder with the diamond stylus is extremely fine and must therefore be necessarily sensitive to impacts, shocks or uncontrolled movement. In order to have the stylus checked, take the complete cartridge holder (removal from the tonearm is described above) to your specialist dealer.

Setting the tuning anti-resonator

Your Dual record player has a tuning anti-resonator which permits optimum adaption of the tonearm to the cartridge being used. Not only Dual ULM cartridges but also conventional 1/2" cartridges with a net weight from 2 to 9 g can be optimally adapted with this device. For the ULM cartridge fitted in the factory, you can find the value to be set in the data sheet of the cartridge which is enclosed with these instructions for use. However, this can also be determined from the following diagram in the same way as for 1/2" cartridges.
As the example of the ULM 60 E shows, you select the own weight of the cartridge on the horizontal scale, move vertically upwards until you find the corresponding line for the compliance and you project this point to the vertical scale from which you can then read off the optimum tuning value.
In order to set the tuning anti-resonator, turn the scale ring in clockwise direction until you see the determined scale value above the pointer (Fig. 3).
The value for the Dual ULM 60 E is 7.8. It is recommended to carry out tuning setting before inserting the counterbalance into the tonearm. In this case, hold the stem with one hand and turn the scale ring with the other.

Note

If you turn the damping selector in the range of the wedge-shaped marking to stop position, the tuning anti-resonator is safeguarded against transport damage.



Compliance of HiFi magnetic and dynamic cartridges

Cartridge		Compliance	Stylus pressure	Cartridge mass		
				Mounting		
Manufacturer	Typ			Cartridge	hardware	Total mass
			[mN]	[g]	[g]	[g]
Shure	V 15 III	32	10	6,5	1,8	8,3
	V 15 IV	32	10	6,3	1,8	8,1
	M 95 ED	30	12,5	6,5	1,8	8,3
Ortofon	SL15 Mk II	20	20	7,0	1,5	8,5
	M 20 E	32	10	7,0	1,5	8,5
	M 20 FL-Sup.	20	15	5,5	1,2	6,7
Audio-Technica	TK 7 E	20	15	6,8	1,2	8,0
	TK 14 S	20	15	6,2	1,8	8,0
	AT 13 Ea	25	15	5,5	1,8	7,3
	AT 15 Sa	35	15	6,2	1,8	8,0
	AT 20 SLa	25	15	7,6	1,8	9,4

Balancing the tonearm

Precise tonearm balancing is important, above all for cartridges with a low stylus pressure. The tonearm need only be balanced once. However, it is recommended to check the tonearm balance from time to time.
The tonearm is balanced if it remains in a horizontal position when suspended freely and if it returns to this horizontal position if pushed upwards or downwards.
The tonearm is first of all balanced approximately by shifting the counterbalance with the stem in the tonearm tube and then exactly balanced by turning the front knurled wheel on the counterbalance **(1)**:

1. With the tonearm still locked to the tonearm post, turn the platter a few times by hand in clockwise direction.
2. Set the stylus pressure **(3)** and anti-skating **(5)** to "0". Unlock the tonearm and swivel above the tonearm rest.
3. If the tonearm does not return to a horizontal position on its own, release the locking screw **(2)** and shift the counterbalance with the stem until you have an approximate balance. The stem of the counterbalance should then be locked by tightening the locking screw.
4. Subsequently balance the tonearm exactly by turning the front knurled wheel on the counterbalance.
5. Set the stylus pressure and anti-skating.

Setting stylus pressure

Each cartridge requires a certain stylus pressure with which optimum reproduction is obtained. You will find this specification for the fitted cartridge on the enclosed data sheet.
If the tonearm has been exactly balanced, the stylus pressure necessary for the cartridge is set by turning the stylus pressure scale **(3)**. The stylus pressure can be continuously set within the range from 0 to 20 mN (0 - 2 g), whereby the digits on the scale represent the following

1 = 10 mN ≙ 1 g
2 = 20 mN ≙ 2 g

A graduation mark in the range from 2 - 15 mN is analogous to this (0.2 -1.5 g) 1 mN (0.1 g).
The unit works reliably from a stylus pressure of 2.5 mN (0.25 g) onwards.

Anti-skating

The skating force acting upon each tonearm leads to one-sided wear and tear of the stylus and record and can cause distorted reproduction.
In order to balance out the skating force, a counterforce exactly defined with regards to size and direction must be applied. The anti-skating device **(5)** of your HiFi record player fulfills this requirement.

For stylus types usual or standardized nowadays, separate setting scales are available in accordance with the printed symbols:

O Setting for spherical styli.

O Setting for biradial (elliptical) styli.

CD 4 setting for playing CD 4 records with CD 4 special cartridges.

Adjustment of the anti-skating device should be carried out synchronously to setting of the stylus pressure: turn the anti-skating device to the digit of the scale concerned, which corresponds to the adjusted stylus pressure. For example, in the case of 10 mN (1.0 g) stylus pressure also place the anti-skating rotary button in position "1".
The skating force is reduced by approximately 30 % in the case of "wet" playing (playing records moistened with liquid). In this case, it is recommended to accordingly adapt the setting.

Cue Control

Your unit is equipped with a shock-free cue control silicone-damped in both directions.
Thus the tonearm can be lowered to any desired point on the record more gently than is possible by hand. The cue-control lever **(8)** has two positions:

▼ tonearm raised

▼ tonearm on record

The cue control holds the tonearm above the record, and it can therefore be moved to any position over the record with complete safety. A light touch on the cue-control lever **(8)** or by pressing the LIFT button **(10)** to the ▼ position lowers the tonearm gently. The cue-control returns to the ▼ position automatically at the end of the record.
At the same time, the lowering speed can be continuously varied with the adjusting wheel **(6)** (Fig. 2):

◄ = slower

◄◄◄ = faster

With the cueing control in ▼ position, the height of the stylus above the record can be varied by approximately 6 mm by turning the adjusting screw **(4)**.

Pitch control

Each of the standardized speeds 33 1/3 and 45 rpm can be varied with the pitch control.
If the pitch switch **(18)** is switched to ON, the pitch can be varied – separately for each speed – within the range of ± 5.5 % with the rotary controls **(17)** and **(19)**.
Contrary to most quartz-controlled record players, in the case of your Dual record player each preselected speed in the pitch range is exactly quartz-exact and PLL controlled.
If the pitch switch **(18)** is in OFF position, the speed corresponds quartz-exactly to the set rated speed, independently of how the rotary controls **(17)** and **(19)** are set.

Quartz-exact luminous stroboscope

The precise stroboscope marking on the platter edge is flashed at with a quartz-exact frequency via an LED luminous element **(12)**. In this way, the indication is neither dependent on the mains frequency nor does it need several stroboscope rings for various speeds and mains frequencies. It is as exact as a quartz clock.
If the graduated marking seems to stand still, both speeds have been set to quartz precision. By means of the speed of the apparently wandering graduation marking, the speed selected with the pitch rotary control can be determined with extreme ecactness: 1 mark/seconds correspond to a deviation of 0.9 %.
If the graduated marking seems to be moving, the speed is higher than the rated speed, if it appears to move contrary to the direction of rotation, the speed is slower than the rated speed.

Switch-off of Set-down Aid

This HiFi turntable is fitted with a set down aid enabling you to find the correct position of lead-in grooves for either 17 cm or 30 cm records.
When the tonearm is moved slowly inside a stop location is palpable at each 17 cm or 30 cm diameter, indicating the exact set-down point for the diamond for the lead-in groove of these records.
To choose any other portion of the record, the set-down aid may be switched off.

Turning knob **(7)** in ∨ position
Stop location for set down point in lead-in grooves switched on

Turning knob **(7)** in – position
Stop location switched off.

Alignment of the tonearm setting down point

When the set-down aid is switched on (knob **(7)** in position ∨) diamond will place itself into the correct position of the lead-in groove of the record. If, in the case of a subsequently fitted cartridge for example, the stylus sets down too far from the run-in groove, the setting down point of the diamond stylus can be corrected with the alignment screw **(11)**.
If the stylus sets down too far inside or outside the record, turn the alignment screw to the left or the right accordingly. The setting is effective not only for 17 cm but also for 30 cm records.

The platter

The dynamically balanced aluminum diecast platter lies directly on the motor axis and, when placed in position, is automatically fixed through its own weight. Additional locking is not necessary and is also not provided for.

Important! Remove the platter before transporting the unit!

Quartz controlled direct drive EDS 920

The newly developed quartz controlled direct drive of this Dual HiFi record player is a synthesis of the wellknown Dual direct drive motor principle and a highly sensitive electronic system which receives its exactness from a quartz crystal. The drive motor is a no-collector DC motor, in the case of which the mechanical-electrical switchover (commutation) is carried out by two Hall generators, which recognize the respective position of the rotor equipped with an 8-pole annular magnet and which activate the respective winding strands of the static flat coils. The magnetic return plate which also rotates and the annular magnet surround the air-core coil arrangement with a slight air gap so that the drive on the one hand obtains an extremely steady running behavior without any pole sensitivity and on the other hand it obtains a powerful starting torque despite the thrifty supply of energy.
After the rated speed has been attained, this motor needs less than 50 mW in order to maintain rotation of the record player. At the same time, this extremely low power consumption is proof of the highly precise design of this drive principle and, on the other hand, ensures that this HiFi record player is practically absolutely free from rumble.
For determination of the effective speed, the motor is coupled with a multipole generator which supplies a frequency proportional to the speed with great resolution. At the same time, a highly stable frequency is produced from the quartz oscillator via a divider circuit, which corresponds exactly to the generator frequency at rated speed. Both frequencies are applied to a PLL switching circuit and are compared there with each other. Even if the record player is subjected to an additional load, for example a record cleaner, the platter speed remains absolutely constant due to this phase-locked coupling of the control electronics.

Service

All the lubrication points have sufficient oil. Thus, your unit will operate impeccably for many years under normal conditions. Never try to lubricate any of the lubrication points yourself. If your record player should ever need servicing, either take it to your specialist dealer or ask him for the address of the next authorized Dual Servicing Workshop. Please make sure that only original Dual replacement parts are used.
Should the unit ever be dispatched, make sure that this is packed perfectly, if possible, by using the original packaging.

Electrical safety

The unit complies with the International Safety Regulations for radio and related devices (IEC 65).

Technical data

Current type Alternating current 50 or 60 Hz

Mains voltages 110 – 125 V and 220 – 240 V

Drive
Quartz stabilized electronic direct drive system Dual EDS 920, PLL control

Power consumption
Approximately 4 W, motor during playing < 50 mW

Starting time
(Until the rated speed is attained) approximately 1.8 seconds at 33 rpm

Platter
Non-magnetic, dynamically balanced, removable, total rotating mass approximately 2.0 kg

Platter speeds
33 and 45 rpm, switched over electronically, quartz stabilized. PLL technology, separate quartz-exact adjustment for both speeds, adjustment range ± 5.5 %

Speed control
Quartz-exact, luminous stroboscope with automatic frequency switchover for 33 and 45 rpm

Sensitivity of the luminous stroboscope for 0.3 % speed deviation
20 division marks per minute

Wow and flutter
DIN < ± 0.025 %
WRMS < ± 0.015 %

Signal-to-noise ratio (in accordance with DIN 45 500)
Rumble unweighted signal-to-noise ratio > 55 dB
Rumble weighted signal-to-noise ratio > 78 dB

Tonearm
Distortion-free "ultra-low-mass", aluminum tubular tonearm in gimbal 4 point tip bearing.
Tonearm counterbalance with tuning anti-resonator

Effective tonearm length 221 mm

Offset angle 24° 4'

Tangential tracking error 0.16° /cm

Tonearm bearing friction
(Referred stylus tip)
Vertical < 0.07 mN (0.007 p)
Horizontal < 0.15 mN (0.015 p)

Stylus pressure
Infinitely variable from 0 to 20 mN (0 - 2 g), with 1 mN (0.1 g) calibration in the range from 2 to 15 mN (0.2 - 1.5 g)

Cartridge holder
Removable, optimally adapted to ultra-low-mass cartridges, with long holder plate (in the accessories) also suitable for cartridges with Dual recess-type cartridge assembly and for cartridges with 1/2" attachment and an own weight of 2 to 9 g (including attachment material)
Adjustable overhang: 5 mm

Cartridge See separate data sheet